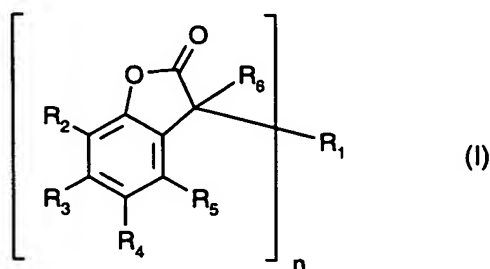


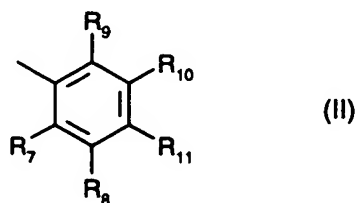
WHAT IS CLAIMED IS:

1. A powder coating composition comprising
  - a) an organic film-forming binder and
  - b) as stabilizer at least one compound of the benzofuran-2-one type.
2. A powder coating composition according to claim 1, in which component (b) is a compound of the formula I



in which, if n is 1,

R<sub>1</sub> is unsubstituted or C<sub>1</sub>-C<sub>4</sub>alkyl-, C<sub>1</sub>-C<sub>4</sub>alkoxy-, C<sub>1</sub>-C<sub>4</sub>alkylthio-, hydroxyl-, halogen-, amino-, C<sub>1</sub>-C<sub>4</sub>alkylamino-, phenylamino- or di(C<sub>1</sub>-C<sub>4</sub>alkyl)amino-substituted naphthyl, phenanthryl, anthryl, 5,6,7,8-tetrahydro-2-naphthyl, 5,6,7,8-tetrahydro-1-naphthyl, thienyl, benzo[b]thienyl, naphtho[2,3-b]thienyl, thianthrenyl, dibenzofuryl, chromenyl, xanthenyl, phenoxathiinyl, pyrrolyl, imidazolyl, pyrazolyl, pyrazinyl, pyrimidinyl, pyridazinyl, indolizynyl, isoindolyl, indolyl, indazolyl, purinyl, quinolizynyl, isoquinolyl, quinolyl, phthalazinyl, naphthyridinyl, quinoxalinyl, quinazolinyl, cinnolynyl, pteridinyl, carbazolyl, β-carbolinyl, phenanthridinyl, acridinyl, perimidinyl, phenanthrolinyl, phenazinyl, isothiazolyl, phenothiazinyl, isoxazolyl, furazanyl, biphenyl, terphenyl, fluorenyl or phenoxazinyl, or R<sub>1</sub> is a radical of the formula II



and,

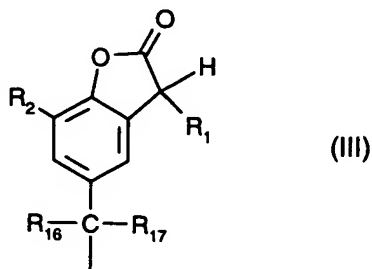
if n is 2,

$R_1$  is unsubstituted or  $C_1$ - $C_4$ alkyl- or hydroxyl-substituted phenylene or naphthylene; or is  $-R_{12}-X-R_{13}-$ ,

$R_2$ ,  $R_3$ ,  $R_4$  and  $R_5$  independently of one another are hydrogen, chlorine, hydroxyl,  $C_1$ - $C_{25}$ -alkyl,  $C_7$ - $C_9$ phenylalkyl, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_6$ cycloalkyl;  $C_1$ - $C_{18}$ alkoxy,  $C_1$ - $C_{18}$ alkylthio,  $C_1$ - $C_4$ alkylamino, di( $C_1$ - $C_4$ -alkyl)amino,  $C_1$ - $C_{25}$ alkanoyloxy,  $C_1$ - $C_{25}$ alkanoylamino,  $C_3$ - $C_{25}$ alkenoyloxy,  $C_3$ - $C_{25}$ -

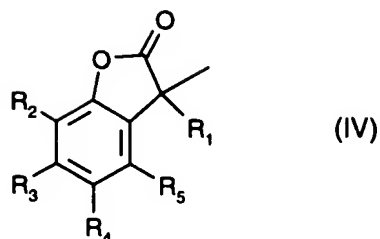
alkanoyloxy interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_6$ - $C_9$ cycloalkylcarbonyloxy,

benzoyloxy or  $C_1$ - $C_{12}$ alkyl-substituted benzoyloxy; or else the radicals  $R_2$  and  $R_3$  or the radicals  $R_3$  and  $R_4$  or the radicals  $R_4$  and  $R_5$  , together with the carbon atoms to which they are attached, form a benzo ring,  $R_4$  is additionally  $-(CH_2)_p-COR_{15}$  or  $-(CH_2)_qOH$  or, if  $R_3$ ,  $R_5$  and  $R_6$  are hydrogen,  $R_4$  is additionally a radical of the formula III



in which  $R_1$  is as defined above for  $n = 1$ ,

$R_6$  is hydrogen or a radical of the formula IV



where  $R_4$  is not a radical of the formula III and  $R_1$  is as defined above for  $n = 1$ ,

$R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$  and  $R_{11}$  independently of one another are hydrogen, halogen, hydroxyl,

$C_1$ - $C_{25}$ alkyl,  $C_2$ - $C_{25}$ alkyl interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_1$ - $C_{25}$ alkoxy,  $C_2$ - $C_{25}$ -

alkoxy interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_1$ - $C_{25}$ alkylthio,  $C_3$ - $C_{25}$ alkenyl,  $C_3$ - $C_{25}$ -

alkenyloxy,  $C_3$ - $C_{25}$ alkynyl,  $C_3$ - $C_{25}$ alkynyloxy,  $C_7$ - $C_9$ phenylalkyl,  $C_7$ - $C_9$ phenylalkoxy, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenoxy; unsubstituted or  $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkyl; unsubstituted or  $C_1$ - $C_4$ -alkyl-substituted  $C_5$ - $C_8$ cycloalkoxy;  $C_1$ - $C_4$ alkylamino, di( $C_1$ - $C_4$ alkyl)amino,  $C_1$ - $C_{25}$ alkanoyl,  $C_3$ - $C_{25}$ alkanoyl

interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_1$ - $C_{25}$ alkanoyloxy,  $C_3$ - $C_{25}$ -alkanoyloxy inter-

rupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_1$ - $C_{25}$ alkanoylamino,  $C_3$ - $C_{25}$ -alkenoyl,  $C_3$ - $C_{25}$ al-

kenoyl interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_3$ - $C_{25}$ alkenoyloxy,  $C_3$ - $C_{25}$ alkenoyloxy

interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  ;  $C_6$ - $C_9$ cycloalkylcarbonyl,  $C_6$ - $C_9$ cycloalkylcar-

bonyloxy, benzoyl or  $C_1$ - $C_{12}$ alkyl-substituted benzoyl; benzoyloxy or  $C_1$ - $C_{12}$ alkyl-substituted

benzoyloxy;  $\text{—O—}\overset{\overset{R_{18}}{|}}{\underset{\underset{R_{19}}{|}}{C}}\text{—}\overset{\overset{O}{||}}{C}\text{—}R_{15}$  or  $\text{—O—}\overset{\overset{R_{20}}{|}}{\underset{\underset{H}{|}}{C}}\text{—}\overset{\overset{R_{21}}{|}}{\underset{\underset{R_{22}}{|}}{C}}\text{—O—}R_{23}$  , or else, in formula II, the

radicals  $R_7$  and  $R_8$  or the radicals  $R_8$  and  $R_{11}$  , together with the carbon atoms to which they are attached, form a benzo ring,

$R_{12}$  and  $R_{13}$  independently of one another are unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenylene or naphthylene,

$R_{14}$  is hydrogen or  $C_1$ - $C_8$ alkyl,

$R_{15}$  is hydroxyl,  $\left[ -O^- \frac{1}{r} M^{r+} \right]$ ,  $C_1$ - $C_{18}$ alkoxy or  $-N \begin{matrix} R_{24} \\ R_{25} \end{matrix}$ ,

$R_{16}$  and  $R_{17}$  independently of one another are hydrogen,  $CF_3$ ,  $C_1$ - $C_{12}$ alkyl or phenyl, or  $R_{16}$  and  $R_{17}$ , together with the C atom to which they are attached, form an unsubstituted or mono- to tri- $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_8$ cycloalkylidene ring;

$R_{18}$  and  $R_{19}$  independently of one another are hydrogen,  $C_1$ - $C_4$ alkyl or phenyl,

$R_{20}$  is hydrogen or  $C_1$ - $C_4$ alkyl,

$R_{21}$  is hydrogen, unsubstituted or  $C_1$ - $C_4$ alkyl-substituted phenyl;  $C_1$ - $C_{25}$ alkyl,  $C_2$ - $C_{25}$ alkyl

interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$ ;  $C_7$ - $C_9$ phenylalkyl which is unsubstituted or

substituted on the phenyl radical 1 to 3 times by  $C_1$ - $C_4$ alkyl;  $C_7$ - $C_{25}$ phenylalkyl which is

interrupted by oxygen, sulfur or  $\text{>N}-R_{14}$  and which is unsubstituted or substituted on the

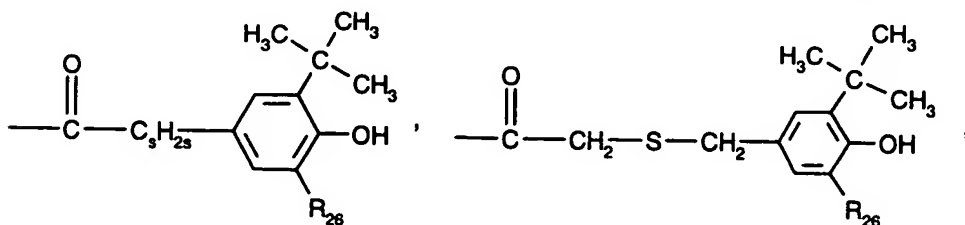
phenyl radical 1 to 3 times by  $C_1$ - $C_4$ alkyl, or else the radicals  $R_{20}$  and  $R_{21}$ , together with the carbon atoms to which they are attached, form an unsubstituted or mono- to tri- $C_1$ - $C_4$ alkyl-substituted  $C_5$ - $C_{12}$ cycloalkylene ring;

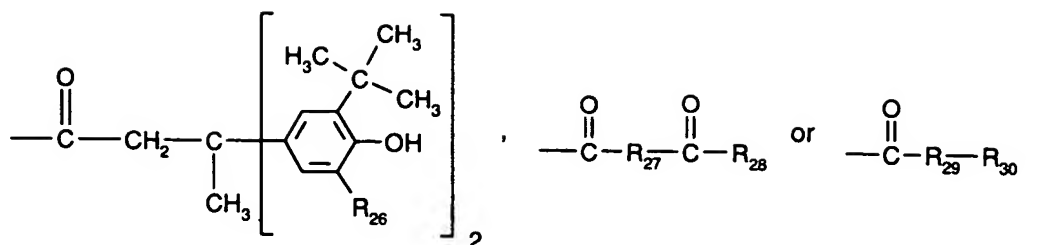
$R_{22}$  is hydrogen or  $C_1$ - $C_4$ alkyl,

$R_{23}$  is hydrogen,  $C_1$ - $C_{25}$ alkanoyl,  $C_3$ - $C_{25}$ alkenoyl,  $C_3$ - $C_{25}$ alkanoyl interrupted by oxygen, sulfur

or  $\text{>N}-R_{14}$ ;  $C_2$ - $C_{25}$ alkanoyl substituted by a di( $C_1$ - $C_6$ alkyl)phosphonate group;  $C_6$ - $C_9$ cyc-

loalkylcarbonyl, thenoyl, furoyl, benzoyl or  $C_1$ - $C_{12}$ alkyl-substituted benzoyl;





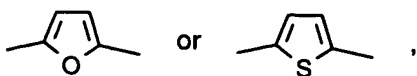
$\text{R}_{24}$  and  $\text{R}_{25}$  independently of one another are hydrogen or  $\text{C}_1$ - $\text{C}_{18}$ alkyl,

$\text{R}_{26}$  is hydrogen or  $\text{C}_1$ - $\text{C}_8$ alkyl,

$\text{R}_{27}$  is a direct bond,  $\text{C}_1$ - $\text{C}_{18}$ alkylene,  $\text{C}_2$ - $\text{C}_{18}$ alkylene interrupted by oxygen, sulfur or



lene,  $\text{C}_7$ - $\text{C}_8$ bicycloalkylene, unsubstituted or  $\text{C}_1$ - $\text{C}_4$ alkyl-substituted phenylene,



$\text{R}_{28}$  is hydroxyl,  $\left[ -\text{O}^- \frac{1}{r} \text{M}^{r+} \right]$ ,  $\text{C}_1$ - $\text{C}_{18}$ alkoxy or  $\begin{array}{c} \text{R}_{24} \\ \diagup \\ \text{N} \\ \diagdown \\ \text{R}_{25} \end{array}$ ,

$\text{R}_{29}$  is oxygen, -NH- or  $\begin{array}{c} \text{O} \\ \parallel \\ \text{N}-\text{C}-\text{NH}-\text{R}_{30} \end{array}$ ,

$\text{R}_{30}$  is  $\text{C}_1$ - $\text{C}_{18}$ alkyl or phenyl,

$\text{R}_{31}$  is hydrogen or  $\text{C}_1$ - $\text{C}_{18}$ alkyl,

M is an r-valent metal cation,

X is a direct bond, oxygen, sulfur or  $-\text{NR}_{31}-$ ,

n is 1 or 2,

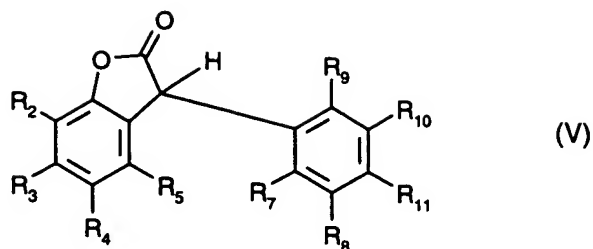
p is 0, 1 or 2,

q is 1, 2, 3, 4, 5 or 6,

r is 1, 2 or 3, and

s is 0, 1 or 2.

3. A powder coating composition according to claim 1, in which component (b) is a compound of the formula V

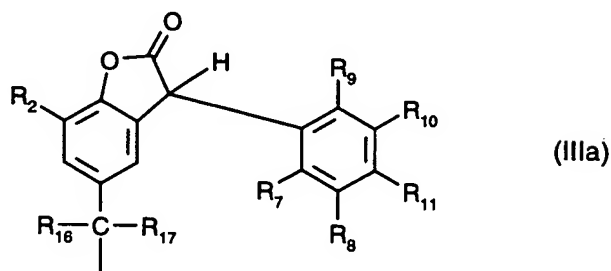


in which

R<sub>2</sub> is hydrogen or C<sub>1</sub>-C<sub>6</sub>alkyl,

R<sub>3</sub> is hydrogen,

R<sub>4</sub> is hydrogen, C<sub>1</sub>-C<sub>6</sub>alkyl or a radical of the formula IIIa



R<sub>5</sub> is hydrogen,

R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy,

R<sub>11</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy, C<sub>2</sub>-C<sub>8</sub>alkanoyloxy or  $\begin{array}{c} R_{20} \quad R_{21} \\ | \quad | \\ -O-C-C-O-R_{23} \\ | \quad | \\ H \quad R_{22} \end{array}$ , with

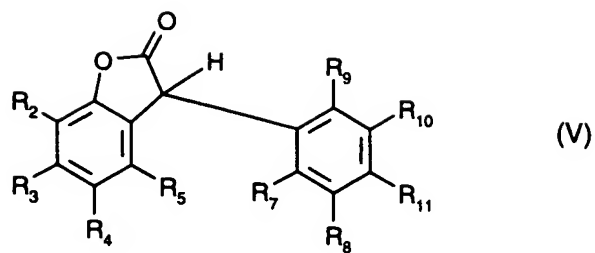
the proviso that at least two of the radicals R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are hydrogen;

R<sub>16</sub> and R<sub>17</sub>, together with the C atom to which they are attached, form an unsubstituted or mono- to tri-C<sub>1</sub>-C<sub>4</sub>alkyl-substituted cyclohexylidene ring,

R<sub>20</sub>, R<sub>21</sub> and R<sub>22</sub> are hydrogen, and

R<sub>23</sub> is C<sub>2</sub>-C<sub>18</sub>alkanoyl.

4. A powder coating composition according to claim 1, in which component (b) is a compound of the formula V

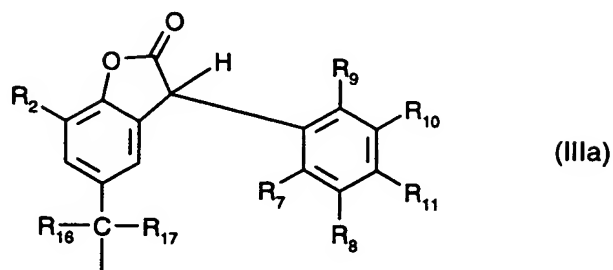


in which

R<sub>2</sub> is tert-butyl,

R<sub>3</sub> is hydrogen,

R<sub>4</sub> tert-butyl or a radical of the formula IIIa



R<sub>5</sub> is hydrogen,

R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub> and R<sub>10</sub> independently of one another are hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy,

R<sub>11</sub> is hydrogen, C<sub>1</sub>-C<sub>4</sub>alkyl or C<sub>1</sub>-C<sub>4</sub>alkoxy, C<sub>2</sub>-C<sub>8</sub>alkanoyloxy or  $\begin{array}{c} R_{20} \quad R_{21} \\ | \quad | \\ -O-C-C-O-R_{23} \\ | \quad | \\ H \quad R_{22} \end{array}$ , with

the proviso that at least two of the radicals R<sub>7</sub>, R<sub>8</sub>, R<sub>9</sub>, R<sub>10</sub> and R<sub>11</sub> are hydrogen;

R<sub>16</sub> and R<sub>17</sub>, together with the C atom to which they are attached, form a cyclohexylidene ring,

R<sub>20</sub>, R<sub>21</sub> and R<sub>22</sub> are hydrogen, and

R<sub>23</sub> is C<sub>2</sub>-C<sub>18</sub>alkanoyl.

5. A powder coating composition according to claim 1, in which component (a) is an epoxy resin, a polyester-hydroxyalkylamide, a polyester-glycoluril, an epoxy-polyester resin, a

polyester-triglycidyl isocyanurate, a hydroxy-functional polyester-blocked polyisocyanate, a hydroxy-functional polyester-uretdione, an acrylat resin with hardener or a mixture of such resins.

6. A powder coating composition according to claim 1, comprising further additives in addition to components (a) and (b).

7. A powder coating composition according to claim 6, comprising as further additives, in addition, one or more components from the group consisting of pigments, dyes, fillers, levelling assistants, devolatilizing agents, charge control agents, optical brighteners, adhesion promoters, antioxidants, light stabilizers, curing catalysts, photoinitiators, wetting auxiliaries or corrosion protection agents.

8. A powder coating composition according to claim 6, comprising as further additives phenolic antioxidants, sterically hindered amines, organic phosphites or phosphonites; and/or thiosynergists.

9. A powder coating composition according to claim 1, in which component (b) is present in an amount of from 0.001 to 10% based on the weight of component (a).

10. A powder coating composition comprising components (a) and (b) according to claim 1 which in the course of curing is in contact with nitrogen oxides originating from combustion gases.

11. A process for reducing the discoloration of heat-curable powder coating compositions, which comprises incorporating into or applying to these compositions at least one component (b) according to claim 1.

12. A process for curing powder coating compositions comprising components (a) and (b) according to claim 1, wherein curing is conducted in a gas oven.

13. A coating film applied and cured by a process according to claim 11 or 12.